

Negative Emotions as Predictors of Blood Pressure Among Hypertensive and Normotensive Residents of Gwarinpa: A Community-Based Study in Abuja, Nigeria

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Abstract

The research was carried out to ascertain how negative emotions predict blood pressure among hypertensive and normotensive residents of Gwarinpa community. A cross-sectional ex-post-facto design was adopted for the study. A stratified random sampling technique was adopted in the selection process. Validated questionnaires were used to measure the six negative emotions, while a Sphygmomanometer was used to measure blood pressure. Binomial Logistic Regression Analysis was used to analyse the six hypotheses in the study. The result of the survey revealed that probability of being diagnosed of high blood pressure was more likely among participants with severe anxiety than participants with other levels anxiety (Exp (B) = 1.74, $p < .01$; 95% CI 0.60 – 0.92). The chance of being diagnosed of high blood pressure was significantly more likely among participants with severe psychological stress than participants with other levels of psychological stress (Exp (B) = 1.76, $p < .001$; 95% CI 1.66 – 1.891). The probability of being diagnosed of high blood pressure was significantly more likely among participants with emotional instability than participants with emotional stability (Exp (B) = 1.69, $p < .001$; 95% CI = 1.45 – 1.96). Findings further revealed that a unit increase in respondents' level of dispositional optimism, significantly decreases the probabilities of being hypertensive (Exp (B) = -.40, $p < .05$; 95% CI 0.49 - 0.74). The study, therefore, concluded that severe anxiety, stress, emotional instability and high dispositional optimism were high-risk factors to high-blood pressure, while depression and life satisfaction are not necessarily risked factors for high blood pressure, while among the residents of Gwarinpa.

Keywords

Anxiety, Depression, Stress, Hypertension, Normotension

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1. Introduction

According to Bashir [1] in his definition of hypertension, he posited that essential hypertension or what is commonly referred to as high blood pressure is regarded from a professional medical perspective as an asymptomatic condition of unknown origin. Blood pressure is also that which is solely been lowered down through drugs and various behavioral measures, such as reducing obesity and overweight, avoiding excessive alcohol consumption and high sodium

intakes yet not controlled [2]. Blood pressure that is low is called hypotension, and pressure that is consistently high is popularly known as hypertension. Both may be of sudden onset or long duration. Long-term hypertension is a risk factor for many diseases, including kidney failure, heart disease, and stroke. Long-standing hypertension is more common than long-lasting hypotension in Western countries [2].

Currently, arterial hypertension has been found to be the most crucial cause of degenerative conditions. Though, it has been projected by World Health Organization that

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non-transmissible diseases will be the leading cause of functional disability in the next two decades and, among chronic degenerative conditions, arterial hypertension will be the most critical cause [2]. Hypertension is a public health concern due to its magnitude, risks, difficulties in management, high medical and social costs and severe cardiovascular and renal complications [3]. The number of deaths due to hypertension as the primary cause was estimated to be over 7 million in 2002, approximately 13% of all reported deaths [2]. In addition to aforementioned facts, Kearney and colleagues [4] in their research, found that hypertensive adults will reach 1.5 billion by 2025, around 30% of the world population.

Marking the World Health Day as Nigeria joins the rest of the world, medical doctors and pharmacists, under the aegis of the Nigerian Medical Association (NMA) and Pharmaceutical Society of Nigeria (PSN) decried the rising number of hypertension (also known as high blood pressure) cases in the country with its attendant complications i.e. stroke, heart attack, blindness and kidney failure. One in three adults worldwide is affected by high blood pressure and implicated in over 18 percent of death rate globally [1]. Therefore, hypertension was identified dangerous and a silent killer, because it does not show signs or symptoms early to be attended to early enough, and as such has claimed the lives of millions of Nigerians. Scholars and researchers were therefore charged to show increased concern in hypertension to alleviate its reported prevalence in our society before it becomes an epidemic [1].

The global prevalence of hypertension is on the increase. To support this fact, in 2000, 972 million people had hypertension with a prevalence rate of 26.4%. However, hypertension is projected to increase to 1.54 billion affected individuals and a prevalence rate of 29.4% in 2025 [4]. The prevalence of hypertensive people globally was estimated to be around 40%, and is accounted for approximately 7.5 million deaths in 2008 [5]. The latest health statistics from the United States of America have reported a hypertension prevalence of 33% among adults, and within this population, only 53% reached target levels recommended by guidelines [6].

The range prevalence of hypertensive individuals amongst African countries are between 11% - 42% [7]. In a recent community-based study of rural and semi-urban population in Enugu, Nigeria put the prevalence of hypertension in Nigeria at 32.8% [8]. A meta-analytical study published recently estimated the countrywide prevalence to be between 12.4 and 34.8 percent. The disturbing reality of this statistics is that between a staggering 20,088,000 and 56,376,000 Nigerian citizens are hypertensive.

Increasing rate of hypertension globally is worrisome; in the

year 2005 there was a projection that by 2025 the prevalence rate of hypertension shall be increased by 11.36% to stand at 29.4% globally [4], as at 2011 the prevalence rate had already risen by 51.51% which hold an estimated value of 40%. The swift shoot up beyond expectations attracts professionals' attention. Medical doctors and pharmacists, under the aegis of the Nigerian Medical Association (NMA) and Pharmaceutical Society of Nigeria (PSN) have tried curbing the increase rate of hypertension using unidimensional med pharmacology approach but yet to no avail.

Most (75%) of the world hypertensive population is in developing countries as projected by [7] due to a perceived high level of vulnerability toward stressors. In Nigeria for example being a developing country, hypertension is the number one risk factor for stroke, heart failure, ischemic heart disease, and kidney failure [4]. The reasons for these resultant effects of hypertension in Nigeria ranges from increasing adult population to decreasing economic value, high standard of leaving and unemployment. This therefore makes the rising prevalence of hypertension in Nigeria to be non-negotiable. The researchers observed that hypertension could be influence by some identified negative emotions.

Hypertension develops and progresses in people with hypertensive diathesis triggered by environmental and dispositional factors such as stress, personality among others [9]. It has been observed that psychosocial factors, in particular, depression, anxiety, and anger could contribute to the etiological nature of hypertension and these aforementioned negative emotions are most often exhibited after exposure to unpleasant events or situations. This informed the direction of this study to examine the predictive influence of negative emotions on high blood pressure.

2. Review of Literature

The meta-analysis study of Pan and Yan [12] involving thirteen cross-sectional studies and 151,389 subjects were analyzed to establish the association of anxiety with the risk of hypertension. Random Effect Model (REM) was used to analyze the heterogeneity studies ($PQ < 0.001$; $I^2=84.9\%$) revealing that anxiety had a significant positive association with hypertension (OR 1.40, 95% CI 1.20–1.62). While a significant positive relationship existed between anxiety and risk of hypertension (OR 1.18, 95% CI 1.02–1.37).

A depressive disorder is one of the most prevalent forms of mental illness and is of significant public health importance [13]. It is characterized by abnormal and persistent low mood, accompanied by other symptoms including sleep disturbance, loss of appetite, suicidal thoughts, impaired concentration, attention, guilt and pessimism. The prevalence of depression has risen dramatically in recent years; in fact, the World

Health Organization [2] reported that more than 350 million people suffers from this condition worldwide. Depression has been found to coexist with cardiovascular diseases and its associated risk factors such as hypertension, diabetes, overweight, and unhealthy lifestyles (smoking and harmful alcohol consumption) [14]. Evidence supporting the relationship between depression and blood pressure (BP) is, however, complex and remains controversial. The study conducted by Delaney and colleague [15] revealed that patients with baseline depressive symptoms did not have an increased risk of incident hypertension (relative risk: 1.02; 95% confidence interval [CI]: 0.99 to 1.05). Also, there is paucity of studies that address the relationship between depression and hypertension control in hypertensive populations concerning the control of hypertension in Nigeria.

Studies have reported that pessimistic people were angrier, hostile, and prone to unhealthiness, and they more often than none, blame themselves for their challenges or problems, and also given to fatalism and catastrophic thinking, while optimists, in contrast, were emotionally and physically healthier and experienced half the deaths of pessimists over a period of 30 years [16]. The study conducted by Das et al. (2006) revealed that participants who are optimistic about life were less likely to experience chronic challenges associated with hypertension such as stroke, cardiac arrest than participants who are pessimistic. Optimism reduces the risk of recurrent heart attack after a first heart attack and accelerates recovery after bypass surgery [16]. A particularly interesting study in nearly 1000 people from the Netherlands showed that optimistic people had less than 25% of the risk for heart attack as pessimistic people [16].

In the study of Sangeeta and Stuti [17], they purposed to examine the impact of personality (neuroticism, i.e., emotional stability) on blood pressure of two hundred and fourty hypertensive and normotensive participants selected from Gurgaon, Delhi. The outcome of the study revealed that neuroticism personality type had a significant effect on hypertension status $F(1, 236) = 6023.97, p < .01$. The results further showed that hypertensive patients ($M = 171.77$) scored high in all the dimensions of neuroticism compared to normotensive patients ($M = 107.21$).

Studies have suggested that chronic exposure to stress may influence increased blood pressure. A systematic review followed by a meta-analysis study conducted by Daniela, Gopalakrishnan, Juvenal, and Marcos [9] purposed to assess the effect of psychological stress on blood pressure increase sourcing data (2,043 studies, and 34,556 subjects) mainly from Ingenta, PsycINFO, PubMed, Scopus and Web of Science that were published in many languages; from January 1970 to December 2006. Results showed that individuals who had stronger responses to stressor tasks were 21% more likely

to develop blood pressure increase when compared to those with less strong reactions (OR: 1.21; 95%CI: 1.14-1.28; $p < .001$). Although the magnitude of effect was relatively small, results suggest the relevance of the control of psychological stress to the non-therapeutic management of high blood pressure.

The work of Stefania and Alfonso [18] using data from SHARE revealed that a significant negative relationship was found between a measure of high blood-pressure and life satisfaction. Similarly, the study of Blanchflower and Oswald [19] concluded that there was an inverse relationship between a measure of psychological well-being and a measure of high blood-pressure, such that, studies from happier countries reported less hypertension.

Life satisfaction has been cloudily linked with blood pressure. The studies of Romero, Silva, and Villasmil [20] that examined 3688 adolescents (1634 males and 2054 females) from the normal blood pressure group and high blood pressure group confirmed this. The findings revealed that significant relationship existed between life satisfaction levels and high blood pressure among the sampled adolescents. The results further showed that low life satisfaction level is related with the HBP in males adolescents. The study of Stefania and Alfonso [21] and Blanchflower and Oswald [22] revealed similar findings. The results confirm that there was a significant negative correlation between high blood pressure problems and life satisfaction.

Despite the availability of effective treatment, over half of the patients being treated for hypertension drop out of care entirely within a year of diagnosis [23]. The major approach to the management of hypertension in Nigeria (and perhaps elsewhere) is the use of anti-hypertensive medications, (in addition to complimentary dietary control that ensures reduction of salt intake and consumption of green leafy vegetables). These drugs are either vasodilators that tend to widen the blood vessels to reduce resistance or diuretics that inhibit tubular re-absorption of salt and water with a consequent reduction in blood pressure. However, the pharmacological actions of these drugs are fraught with numerous side effects [24]. Therefore, preventive approach to the menace of hypertension is considered to be highly important.

The death rate in Nigeria is an increasing rate due to most common non-communicable disease in Nigeria known as hypertension. It is most often tagged "silent killer" because it has no significant symptom and moreover, many Nigerians have lost their lives to hypertension undiagnosed in their lifetime [1]. Hypertension plays a significant role in the reduction of life expectancy speculated for Nigerians.

The study significance as hypothesized shall enable

stakeholders identified the place negative emotions as precipitating, protective, perpetuating, and predisposing factors to blood pressure. There is paucity of local literature that set to address the role of negative emotions on hypertension. Furthermore, there was no consensus on the direction of negative effect on blood pressure for studied participants even among the handful and available studies.

This current study aimed at testing the following research hypotheses;

1. Chances of being diagnosed with high blood pressure will significantly higher among participants with severe depression than participants with other levels (normal, mild and moderate) of depression.
2. The probability of being diagnosed with high blood pressure will significantly higher among participants with severe anxiety than participants with other levels (normal, mild and moderate) of anxiety.
3. Odds of being diagnosed with high blood pressure will significantly higher among participants with severe psychological stress than participants with other levels (normal, mild and moderate) of stress.
4. Chances of being diagnosed with high blood pressure will significantly higher among participants who are emotionally unstable than participants who are emotionally stable.
5. The probability of being diagnosed with high blood pressure will significantly higher among participants with high dispositional optimism than participants with low dispositional optimism.
6. Chances of being diagnosed of high blood pressure will significantly greater among participants with dissatisfied life satisfaction than participants with satisfied life satisfaction.

3. Methods

3.1. Research Design/Settings

The present study adopted a cross-sectional ex-post facto survey design that enabled the researchers establish the influence of independent variables among residents with normal blood pressure and residents with high blood pressure. The study is a community-based study conducted within the Federal Capital Territory which is capital city of Nigeria. Residences of FCT, Abuja are the second after Lagos with highest prevalence of hypertension to the percentage rate of 22.7% in Nigeria. FCT was subdivided into various districts. This research being a community based study focused on Gwarinpa district.

3.2. Participants/Sampling Techniques

The participants for the study were hypertensive and normotensive residents of Gwarinpa FCT, Abuja who were engaged by a household survey through stratified random sampling techniques. One hundred and seventeen (81 females and 36 males) participated in the study. Sixty-eight ($n = 68$) normotensive residents and forty-nine ($n = 49$) hypertensive residents of Gwarinpa participated in the study. Socio-demographic descriptive of the study showed that 29.1% of the participants were within the young adulthood age grade, 34.2% of the respondents were within the middle adulthood age grade while 36.8% were within the late adulthood age grade. 30.8% of the respondents were male, while 69.2% of the respondents were female residents of the study area. 29.9% were single respondents, 53% were married, while 17.1% of the respondents were divorced.

3.3. Instruments

Depression, Anxiety and Stress Scale: The instruments used in the study were widely used and psychometrically sound to measure the variables of interest. DASS-21 by Lovibond (1995) was used to measure the severity of negative emotional state of Depression, Anxiety and Stress. DASS 21 is a short form of DASS which is a self-report 4-point Likert scale and composed of three subscales: Depression (DASS-D), Anxiety (DASS-A), and Stress (DASS-S). The DASS-21 measures each of the three mental health conditions, over the past week, through seven items. The intensity of anxiety conditions was determined by the sum scores of responses to its 7-item subscale multiply by 2. Scores between 0-20.99 on DASS-D indicated other categories of depression (normal, mild, and moderate), while scores equal and above 21 indicated severe depression. Scores between 0-14.99 on DASS-A indicated other categories of anxiety (normal, mild, and moderate) while scores equal to and above 15 indicated severe anxiety. Scores between 0-25.99 on DASS-S indicated other categories of stress (normal, mild, and moderate) while scores equal to and above 26 indicated severe psychological stress. The DAS scale in the current study reported significant Cronbach alpha of 0.97, indicating an acceptable level of reliability. The validity of DASS was established through the construct (discriminant and convergent) validity.

Neuroticism Personality Scale – BFI: Neuroticism scale was extracted from the widely used Big Five Inventory (BFI). The BFI developed by John *et al.*, (1991) to measure the big five dimensions of personality. The Neuroticism scale of BFI took approximately three to five minutes to administer. Participants rated each item using a 4-point Likert scale ranging from 1 = "strongly disagree" to 4 = "strongly agree," based on how will they felt the item described them. The score below the norm ($\bar{x} = 34.53$) indicated emotional stability, while scores above

the norm ($\bar{X} = 34.53$) indicated emotional instability. The current study established a Cronbach alpha reliability of 0.90.

Revised Life Orientation Test: The LOT-R (Scheier, Carver & Bridges, 1994) is a self-report scale with ten items measuring optimism. Four items were filler items, and six items contributed to optimism score. Each item was rated on a 5-point Likert scale (0 = I disagree a lot, 4 = I agree a lot). Acceptable internal consistency was demonstrated by reporting Cronbach alpha reliability of 0.82 in the current study. The score below the norm ($\bar{X} = 44.06$) indicated pessimistic life orientation, while scores equal and above the norm ($\bar{X} = 44.06$) indicated optimistic life orientation.

Satisfaction with Life Scale: Satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item scale designed to measure global cognitive judgments of one's life satisfaction. Participants indicated how much they agree or disagree with each of the 5 items using a 7-point scale, that ranges from 7 strongly agree to 1 strongly disagree. Score on SLS was dummy coded, such that scores of 5 -14 indicates dissatisfied, the score between 15 – 35 indicates other satisfied life. Cronbach alpha reliability for the current study was 0.91.

Blood Pressure Record: There were two record spaces for hypertension data; the first was based on self-report and the second on actual measurements. **Self-Reported Hypertension:** Respondents was asked whether they had ever been diagnosed of high blood pressure or currently being managed for high blood pressure by any medical or trado-medical practitioners. Self-report was done in string (a) and String (b) in the space of five minutes to record incident Hypertension using mercury sphygmomanometer instruments by two research assistants who were trained and registered nurses. The sphygmomanometer was used to validate the subjective data (self-report) and control for possible co-founding outcomes.

The outcome of the objective assessment (mercury sphygmomanometer instruments) was further used for data analysis. Measurement of systolic and diastolic equal or greater than 139 and 89 respectively was considered high blood pressure (AMA, 2017).

3.4. Procedures

Required ethical considerations were observed in the study Area. Having requested for ethical approval, the research purpose and objectives, the inherent benefits, and risk involved were all explained to the participants, while a comprehensive informed consent form was made available for signature consent. The study involved Hypertensive and Normotensive Residents for specificity purposes. The hypertensive residents that participated in the study resided in the study area, however, participants were predominantly outpatients of Gwarinpa General Hospital, Abuja while the Normotensive participants were residents of Gwarinpa, but cleared of High Blood Pressure and other associated health challenges. Residents who gave their consents and not less than 25 years strictly participated in the study. Residents who are hypotensive, pre-hypertensive, pregnant or diagnosed of hypertension as co-morbid health challenge were excluded in the study.

3.5. Statistical Analysis

Hypotheses one to six were formulated to examine how negative emotions, namely; anxiety, depression, psychological stress, life orientation and life satisfaction were predictive of blood pressure. The stated hypotheses were tested using binomial regression analysis.

4. Results

Table 1. Showing the Frequency distributions of Psychosocial variables and its Prevalence Estimates on Blood Pressure.

Variables	Frequencies			
	Surveyed Participants (Hypertensive and Normotensive)		Participants with High Blood Pressure	
	N	%	N	%
Total	117	100%	49	41.9
Age Group				
Young Adulthood	34	29.1	11	22.4
Middle adulthood	40	34.2	17	34.7
Late adulthood	43	36.8	21	42.9
Gender				
Male	36	30.8	17	34.7
Female	81	69.2	32	65.3
Marital Status				
Single	35	29.9	09	18.4
Married	62	53.0	29	59.2
Divorce	20	17.1	11	22.4
Depression				
Severe	17	14.5	02	04.1

Variables	Frequencies			
	Surveyed Participants (Hypertensive and Normotensive)		Participants with High Blood Pressure	
	N	%	N	%
Others	100	85.5	47	95.9
Neuroticism				
Emotional stability	58	49.6	06	12.2
Emotional Instability	59	50.4	43	87.8
Anxiety				
Severe	61	52.1	37	75.5
Others	56	47.9	12	24.5
Stress				
Severe	54	46.2	41	83.7
Others	63	53.8	08	16.3
Life Orientation				
Optimism	81	69.2	20	40.8
Pessimism	36	30.8	29	59.2
Life satisfaction				
Dissatisfied	21	17.9	10	20.4
Others	96	82.1	39	79.6

Prevalence Estimates

Table 1 showing the prevalence estimate revealed that 49 cases of high blood (41.9%) was reported in the sample of 117 survey participants, such that approximately 1 of every 3 residents in the study area reported such. High BP prevalence was found among residents in their late adulthood (42.9%) when compared to residents in young adulthood (22.4%) and young adulthood (34.7%). Female residents (65.3%) reported more HBP when compared the male counterparts (34.7%). Married residents (59.2%) reported HPB when compared to residents who were single (18.4%) and divorced (22.4%). High prevalence was found among residents with severe

scores on Anxiety (75.5%), stress (83.7%) scale and other scores (95.9%) on depression when compared to other scores on anxiety (24.5%), stress (16.3%) and severe scores on depression (4.1%) scale respectively. HBP prevalence was also found among residents who were emotionally unstable (87.8%) when compared to respondents who are emotionally stable (12.2%). HBP prevalence was found among residents identified with pessimistic life orientation (59.2%) when compared to residents with optimistic life orientation (40.8%). HBP prevalence was also found among residents with other scores (79.6%) on life satisfaction scale when compared with residents with dissatisfied life (20.4%)

Table 2. Showing the Binomial Logistic Regression of Psychological Risk Factors as predictors of High Blood Pressure (Hypertension).

VARIABLES	B	Exp. (B)	Wald	Sig.	C.I	R ²	p
Depression	-.10	0.11	0.60	.44	0.86 – 1.44	0.68	<.001
Anxiety	.30	1.74	07.28	.01	0.60 - 0.92		
Stress	.27	1.76	12.52	.00	1.66 – 1.89		
Neuroticism	.52	1.69	46.17	.00	1.45 – 1.96		
Life Orientation	-.93	0.40	33.59	.04	0.49 - 0.74		
Life satisfaction	-.07	0.93	02.36	.13	0.85 – 1.02		

The binomial regression analysis showed that negative emotions (depression, anxiety, stress, neuroticism personality, dispositional optimism, life satisfaction) significantly predicted blood pressure among residents of Gwarinpa ($x^2 = 223.33$, $df = 6$, $p < .001$; $r^2 = .62$). This implies that 68% of the variance observed in blood pressure among the residents was accounted for by the influence of the negative emotions. The 68% variance was revealed by the phi coefficient of the R² value (0.68) as reported by Nagelkerke.

Findings revealed that a unit increased in respondents' level of anxiety, significantly increases the chances of being hypertensive (Exp (B) = 1.74, $p < .01$; 95% CI 0.60 – 0.92). This implies that the tendency of being diagnosed with high blood pressure was 74% higher among respondents with severe anxiety than respondents with other levels of anxiety.

This finding was in support with the stated hypothesis two which states that "Probability of being diagnosed of high blood pressure will be significantly greater among participants with severe anxiety than participants with other range (normal, mild and moderate) of anxiety". Therefore, hypothesis two is therefore accepted.

The result further revealed that a unit increase in respondents' level of stress, significantly increases the probabilities of being hypertensive (Exp (B) = 1.76, $p < .001$; 95% CI 1.66 – 1.89). This implies that the probability of being diagnosed with high blood pressure was 76% higher among respondents with severe psychological stress than respondents with other levels of stress. This finding was in support with the stated hypothesis three which states that "Chances of being diagnosed of high blood pressure would be greater among

participants with severe psychological stress than participants with other range (normal, mild and moderate) of stress". Therefore, hypothesis three is therefore accepted.

It was further revealed that a unit increase in respondents' score on neuroticism scale significantly increases the probabilities of being hypertensive (Exp (B) = 1.69, $p < .001$; 95% CI = 1.45 – 1.96). This implies that the chance of being diagnosed with high blood pressure was 69% higher among respondents with emotional instability than respondents with emotional stability. This finding was in accordance with the stated hypothesis four which states that "Chances of being diagnosed of high blood pressure will be significantly greater among participants who are emotionally unstable than participants who are emotionally stable." Therefore, hypothesis four is therefore accepted.

Result in Table 2 revealed that a unit increase in respondents' level of dispositional optimism, significantly decreases the probabilities of being hypertensive (Exp (B) = -.40, $p < .05$; 95% CI 0.49 - 0.74). This implies that the chance of being diagnosed with high blood pressure was 40% higher among respondents with low dispositional optimism than respondents with high dispositional optimism. This finding was in accordance with the stated hypothesis five which states that "Chances of being diagnosed of high blood pressure will be significantly higher among participants with low dispositional optimism (pessimistic life orientation) than participants with high dispositional optimism (optimistic life orientation)". Therefore, hypothesis five is therefore accepted.

The binomial regression analyses of negative emotions as determinants of blood pressure revealed that depression (Exp (B) = -.11, $p > .05$; 95% CI 0.86 – 1.44), and life satisfaction (Exp (B) = .39, $p > .05$; 95% CI 0.85 – 1.02) were found not predicting blood pressure among resident of Gwarinpa. This informed the rejection of hypothesis one and hypothesis six in the study.

5. Discussion

The present study however established that levels of negative emotions significantly predicted blood pressure among residents of Gwarinpa, Abuja. Abuja was the second largest prevalence of high blood pressure at 22.7% in Nigeria. The current study reported a prevalence of 41.9% among the participants. Research has found that psychosocial and dispositional factors, such as; depression, anxiety, and anger, contribute to the etiology of hypertension [10].

As hypothesized negative emotions significantly predicted blood pressure. Severe anxiety was found to have significantly predisposed respondents to high blood pressure. The present study established that anxiety remained significant predictors

of high blood pressure. The outcome was inconsistent with the study of Pan and Dong [12] that concluded that anxiety is strongly associated with risk of hypertension. The outcome of the current investigation also revealed that severe stress significantly increases the probability of hypertension. Findings in this like was in agreement with the study of Daniela, Gopalakrishnan, Juvenal and Marcos [9] that concluded that individuals who had stronger responses to stressor tasks were 21% more likely to develop blood pressure increase when compared to those with less strong responses.

It was established that neuroticism played a significant influence on high blood pressure, such that being high on neuroticism significantly increase the tendency of high blood pressure. The outcome was synonymous to the study of Sangeeta and Stuti [17] who concluded that neuroticism personality type has significant effects on hypertension status. Sangeeta et al's study also showed that hypertensive patients showed more score in all the dimensions of neuroticism compared to normotensive.

It was enlightened that pessimism life orientation was found to have significantly predisposed respondents to high blood pressure in other forms of life orientation. Studies have reported that pessimistic people are angrier, hostile, and prone to unhealthiness. Optimists, in contrast, were emotionally and physically healthier. It was well supported by the findings of Giltay, Zitman and Kromhout [18] that concluded that optimistic people had less than 25% of the risk for heart attack or hypertension as compared with pessimistic people.

On the contrary, severe depression and life dissatisfaction were found not to predispose respondents to high blood pressure as hypothesized significantly. This outcome was not in support of the study conducted by Blanchflower and Oswald [21] which showed that, even with more objective measures of high blood-pressure problems, a significant negative relationship was found between these measures and life satisfaction. The outcome also negated the findings of Elderon and whooley [14] which concluded that depression has coexisted with cardiovascular diseases and its associated risk factors such as hypertension, diabetes, overweight, and unhealthy lifestyles. The findings of the current study are in congruence with the conclusion of Delaney and colleague [15] which reported that the relationship between depression and hypertension control among hypertensive population remained controversial.

6. Conclusion

In conclusion, the current study revealed that the prevalence of high blood pressure in Gwarinpa Abuja was far above the projections of the WHO. It was concluded in the present study that severe anxiety, severe stress, emotional instability, and pessimistic life orientation significantly predisposed one to

high/increase blood pressure.

7. Limitations

The current study was limited by its' scope. One hundred and seventeen residents of Gwarinpa might not be adequate to reflect the true prevalence of hypertension among residence of Federal Capital Territory and Nigeria at large.

8. Implication and Recommendation

Implications for practice, policy and research were elaborated in this section.

8.1. Implication for Policy

The study findings accentuated a number of factors that predicted high blood pressure and normal blood pressure among residents of Gwarinpa General Hospital. Therefore, in relation to curbing of the prevailing high blood pressure, focus should shift from over-concentration of drugs to alienating negative psychological considerations that may serve as a perpetuating factor to the high blood pressure. There is need for the government and other relevant stakeholders to review and implement existing policies on management of hypertension to incorporate a multi-disciplinary approach, as such, the service of clinical psychologists in health facilities where treatment and management of hypertension is being carried out nationwide.

8.2. Implication for Practice

The study also brought to the foreknowledge of some psychological factors predicting high blood pressure, while some did not. This marked a significant contribution to knowledge in the field of psychology and general medical practices, especially Health Psychology. It is therefore recommended that clinical psychologists saddled with responsibilities of health management of people diagnosed of high blood pressure should incorporate management of life orientation, anxiety, psychological stress as tools to revert high blood pressure to normal blood pressure.

8.3. Implication for Further Research

It is therefore essential that subsequent scholars or researchers should extend the scope of the research by examining negative emotions and blood pressure among residents of other communities in Abuja and other parts of Nigeria. The hallmark is not by identifying the negative predispositions to high blood pressure but further studies should consider experimenting treatment of negative emotions and observed its impact on the measurement of systolic and diastolic of the

potential participants.

References

- [1] Bashir, S. (2013). Association between knowledge and drug adherence in patients with hypertension in Quetta, Pakistan. *Tropical Journal of Pharmaceutical Research*, 10, 125–132.
- [2] World Health Report (2002). Reducing risks, promoting healthy life. Geneva: Depression. Fact sheet N 369. [<http://www.who.int/mediacentre/factsheets/fs369/en/>]
- [3] Chobanian, V., Bakris, L., Black, R., Cushman, C., Green, A., Izzo, L., et al. (2003). The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA* 289 (1): 2560-72.
- [4] Kearney, M., Whelton, M., Reynolds, K., Muntner, P., Whelton, K., & He, J. (2005). Global burden of hypertension: analysis of worldwide data. *Lancet*. 365: 217-23.
- [5] Global Health Observatory (GHO) (2012), World Health Organization: Raised blood pressure: Situation and trends. [http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/]
- [6] Go, D., Roger, L., Benjamin, J., Berry, D., Borden, B., Bravata, M., Dai, S., Ford, S., Fox, S., Franco, S., Fullerton, J., Gillespie, C., Hailpern, S., Heit, A., Howard, J., Huffman, D., Kissela, M., Kittner, J., Lackland, T., Lichtman, H., Lisabeth, D., Magid, D., Marcus, M., Marelli, A., Matchar, B., McGuire, K., Mohler, R., Moy, S., & Mussolino, E., (2013). Heart disease and stroke statistics-2013 update: a report from the American Heart Association. *Circulation*, 127: 06–e245.
- [7] World Health Organization (2008). STEPS Fact Sheet. Brazzaville: WHO AFRO; 2008.
- [8] Adedoyin, R., Mbada, C., Balogun, M., Martins, T., Adebayo, R., Akintomide, A., & Akinwusi, P. (2008). Prevalence and pattern of hypertension in a semi-urban community in Nigeria. *European J Cardiovasc Prev Rehabil* 2008 (15): 683 - 687.
- [9] Daniela, G., Gopalakrishnan, N., Juvenal, S., & Marcos, P., (2009). Effect of psychological stress on blood pressure increase; A meta-analysis of cohort studies. *Cad. Saúde Pública, Rio de Janeiro*, 25 (4): 715-726.
- [10] Kaplan, S., & Nunes, A. (2003). The psychosocial determinants of hypertension. *Nutr Metab Cardiovasc Dis*. 13: 52-59.
- [11] Evans, L., Charney, S., & Lewis, L., (2005). Mood disorders in the medically ill: scientific review and recommendations. *Biol Psychiatry*. 58: 175-189.
- [12] Pan, C., & Dong, Y. (2015). Association between anxiety and hypertension: a systematic review and meta-analysis of epidemiological studies. *Neuropsychiatric Disease and Treatment*. 11: 1121–1130.
- [13] Murray, C., & Lopez, A. (1996). The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990. *Cambridge, MA, Harvard University Press, 1996*.
- [14] Elderon, L., & Whooley, A. (2013). Depression and cardiovascular disease. *Prog Cardiovasc Dis*, 55: 511–523.

- [15] Delaney JA, Oddson BE, Kramer H, Shea S, Psaty BM, McClelland RL: Baseline depressive symptoms are not associated with clinically important levels of incident hypertension during two years of follow-up: the multi-ethnic study of atherosclerosis. *Hypertension* 2010, 55: 408–414.
- [16] Giltay, E. J., Zitman, F. G., & Kromhout, D. (2008). Cardiovascular risk profile and subsequent disability and mental well-being: the Zutphen Elderly Study. *American Journal of Geriatric Psychiatry*, 16 (11), 874-882.
- [17] Sangeeta, R., & Stuti, D. (2015). Neuroticism Versus Emotional Stability Scores of Hypertensive and Normotensive Males and Females. *Global Advanced Research Journal of Medicine and Medical Science*. 4 (7): 314-320.
- [18] Stefania, M., & Alfonso, A. (2007). Hypertension and life satisfaction: a comment and replication of Blanchflower and Oswald. Discussion paper no. 2007-44.
- [19] Blanchflower, G., & Oswald, J. (2004). Wellbeing over time in Britain and the USA. *Journal of Public Economics* 2004 (88); 1359-1386.
- [20] Romero, V., Silva, E., & Villasmil, J. (2010). Relationship between life satisfaction levels and high blood pressure in adolescents: *Journal of hypertension*. 28: 14 - 43.
- [21] Stefania, M, & Alfonso, S. (2010). Hypertension and life satisfaction: an analysis using data from the survey of health, ageing and retirement in Europe, *Applied Economics Letters*, 18 (2): 183-187, doi: 10.1080/13504850903508291.
- [22] Blanchflower, G., & Oswald, J. (2008). Hypertension and happiness across nations. *Journal of health economics*, 27: 218–33.
- [23] Jayasinghe, J. (2009). Non-adherence in the hypertensive patient: can nursing play a role in assessing and improving compliance? *Can j cardiovasc nurs*. 19 (1): 7-12.
- [24] Scheier, F., Carver, S., & Bridges, W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.